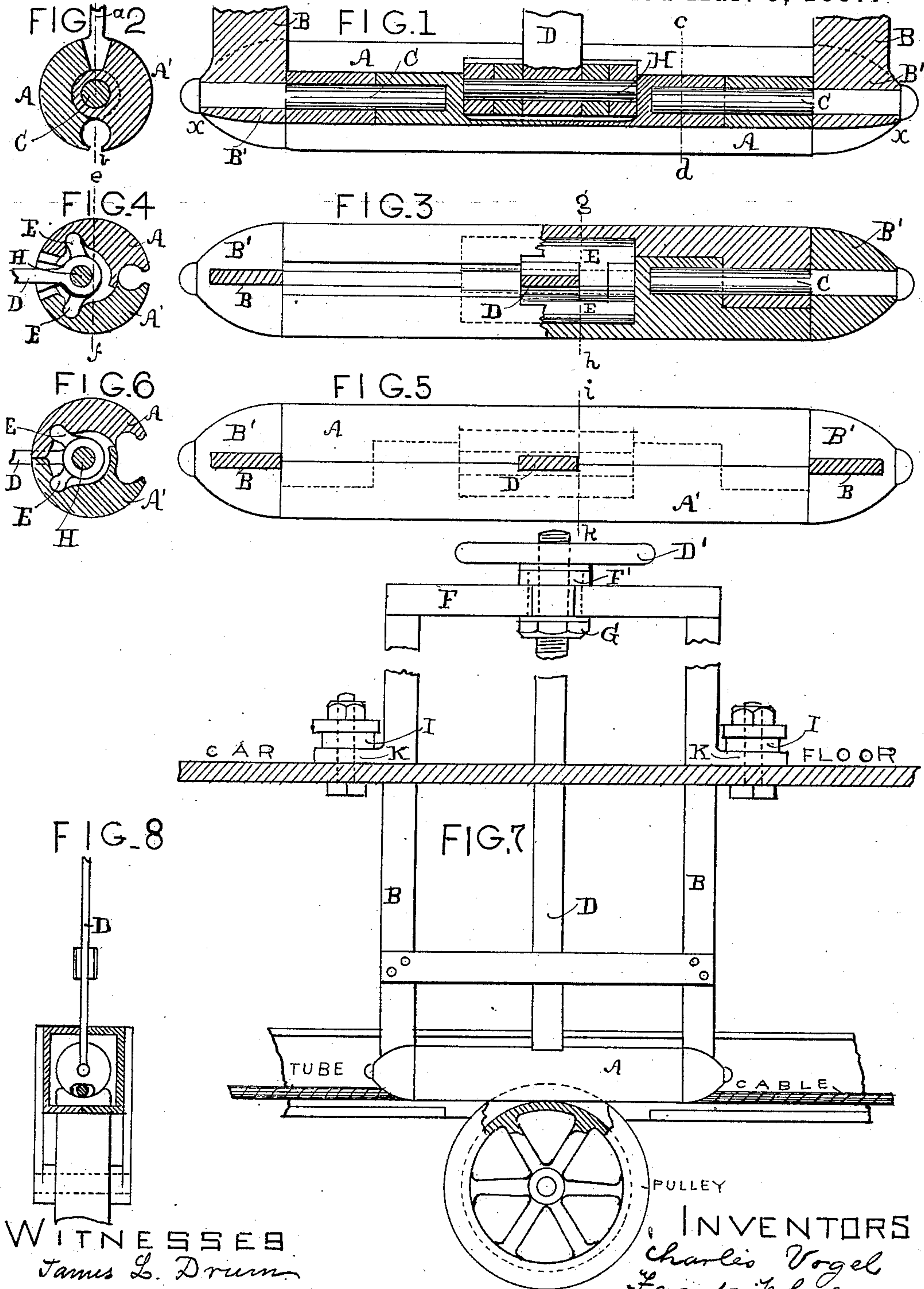


(No Model.)

C. VOGEL & F. WHELAN.
GRIP FOR CABLE RAILWAYS.

No. 359,043.

Patented Mar. 8, 1887.



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GRIP FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 359,043, dated March 8, 1887.

Application filed July 26, 1886. Serial No. 209,259. (No model.)

To all whom it may concern:

Be it known that we, CHARLES VOGEL and FRANK WHELAN, both residents of the city and county of San Francisco, State of California, have invented a new and Improved Grip for Cable Railways, of which the following is a specification.

This invention relates to certain improvements in the form of the grip by which material advantages in the construction both of the grip and the cable-carrying tube are attained, and improved facilities in operating the road upon which the grip is applied are acquired.

The improvements consist in certain combinations of parts of the grip, hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional elevation of that portion of the grip with which our improvements are connected, taken on the line *a b*, Fig. 2. Fig. 2 is a transverse section of the same parts, taken on the line *c d*, Fig. 1. Fig. 3 is a combination of plan and horizontal sectional view of the jaws of the grip when closed, taken on the line *e f*, Fig. 4. Fig. 4 is a transverse section taken on line *g h*, Fig. 3. Fig. 5 is a plan of the jaws of the grip and part of their supporting-frame. Fig. 6 is a transverse section when the jaws are open, taken on line *i k*, Fig. 5. Fig. 7 is an elevation of the grip and section of the cable-carrying tube with one form of operating mechanism for the grip. Fig. 8 is an end view of the lower part of the grip with a transverse section of the tube.

In all the figures of the drawings the same letters of reference are used to indicate the same parts.

A A' are the grip-jaws, which are made as long as the space between the upright bars B B of the supporting-frame. They are hinged together, the spindles C C forming the pivotal points of the hinges. The two jaws together have a perfectly-round exterior, somewhat like a piece of four inch round bar-iron. Each jaw has a semicircular recess or channel at the bottom, running parallel with the axis, which exactly fits one side of the cable, so that when the two jaws are brought together

with pressure the cable interposed is tightly gripped.

The hinged part of the jaws extends about one-third of their length at each end. The remaining one-third of their length, in the middle, is reserved space, which is hollowed out to receive the lower end of the draw-bar or shank of the grip D and the toggle-levers E E, which are used to open and close the jaws.

The lower part of each bar B is formed into a cone-shaped boss, B', through the center of which the spindles C are tightly driven when the parts are put together. The lower part of these bosses will, of course, be grooved to allow the cable to pass by, and these grooves at their outer extremities will, as shown at *x*, Fig. 1, flare outward a little to give good clearance to the cable. The object of these conical bosses is to insure the grip-jaws following centrally into the grooves of the carrying-pulleys. If the pulley or grip should be a little out of line, the pointed bosses will, nevertheless, enter the groove, and the grip-jaws following will adjust themselves to the proper central line.

The draw-bar D is shown in Fig. 7 to be operated by a hand-wheel, D', having a hub with an internal screw, which engages with a screw on the rounded end of the upper part of the draw-bar, the hand-wheel being held from rising by having its hub pass through the boss F' of the cross-bar F, and a screw-nut, G, being screwed on the wheel-hub underneath. This is a simple way to operate the jaws; but any other suitable means may be adopted. We do not claim the means of operating to open and close the jaws as an essential feature of our invention.

The two toggle-levers E E have a face the full width of the recess in the jaws which accommodates them. (See Fig. 3.) One lever may have its hinge part next to the hub of the draw-bar, and the hinge part of the other lever may be on the outer ends. The pivot H of the hinge should fit snugly within the recess—that is, it should be just as long as the recess—to avoid side play. Both the draw-bar and the loose toggle-levers should be neatly fitted without play on the pivot. There will be no necessity to key the draw-bar to the pivot; though, if preferred, to avoid wearing,

it may be secured firmly thereon. The toggle-levers, always loose, may be of case-hardened steel, or otherwise tempered to minimize their tendency to become worn.

5 The space hollowed out from the two jaws to receive the toggle-levers and draw-bar is clearly outlined in Figs. 1, 3, 4, and 6. In the two latter figures it will be noticed that at the top of the recess for the cable a thin strip of
10 the metal of one jaw extends over to the opposite jaw and covers the space between when the jaws are opened at this point. This is done to avoid any sharp cutting-edges, which would injure the cable as it passed through the
15 grip when the car is at rest.

It will be necessary to provide for a slight movement of the grip vertically, as is usual. Any suitable arrangement to effect this may be adopted. We show in Fig. 7 a rubber
20 spring, I, interposed between the nut of the bolt which fastens the grip-frame to the car-floor and the flange K of the frame.

A peculiar feature of this grip consists in its being adapted to be opened and closed to
25 release or grip the cable when actually in contact with the cable-pulleys which support the cable on the straight or curved parts of the line, so that in the matter of stopping and starting the grip can be operated at all points
30 in the route, and in case of a sudden necessity the car can be stopped on a curve and started again without difficulty.

We show the toggle-levers inclosed within a cavity of the grip-jaws, the points of the
35 toggle-levers being above the pivotal point; but manifestly their position may be reversed. The pivot may be above the plane of the points of the toggle-levers and the cavity in the jaws filled in, in which case, of course, the action
40 of the grip-shank will also be reversed. The downward motion would be the one to grip the rope, instead of the upward motion.

There may be other means employed to open and close the jaws of the grip besides the draw-
45 bar and toggle-levers without departing from the principle of this invention.

We do not claim, in a broad sense, a grip operating upon the principle of parting the jaws upon a vertical center line, so that the cable can drop down and out of the grip, for
50 such a form of grip has been long in use; but

What we claim as our invention, and desire to secure by Letters Patent, is as follows:

1. The grip for cable railways herein described, consisting, essentially, of the jaws A
55 A', together forming a round bar, as shown, to fit the semicircular grooved face of the cable-carrying pulleys over which the grip rides, said jaws being hinged upon and supported by the spindles C C, in combination with the
60 spindles C C, held in frame B B, frame B B having conical bosses at lower end and suitable means for opening and closing the jaws to grasp and release the cable, substantially as and for the purpose herein described. 65

2. A grip for cable railways, consisting, essentially, of jaws A A', hinged together, as shown, in combination with a suitable supporting-frame, B B, draw-bar D and suitable mechanism for moving it, and the toggle-
70 levers E E and pin H, the whole being arranged and operating together substantially as and for the purpose set forth.

3. A grip for cable railways, consisting, essentially, of gripping-jaws opening and closing
75 radially about a pivot connecting them together, said jaws being set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, in combination with conical end pieces arranged to guide said grip-
80 ping-jaws fairly into the grooves of said pulley-supports, a suitable supporting-frame, and suitable mechanism to effect the opening and closing of the jaws, substantially as and for the purpose herein described.

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